

APPENDIX 5-C

FORMAT FOR INITIAL RELEASE RESPONSE REPORT

Page

Cover Page

- _____ A. Provide DOH UST Facility ID and Release ID Numbers
- _____ B. Provide facility name and address. If available, provide latitude and longitude coordinates
- _____ C. Date report prepared
- _____ D. Name, address, and telephone number of person/company preparing report

Table of Contents

1. Executive Summary

- _____ A. A brief summary/overview of the important results and findings of UST closure (if appropriate), initial response, initial abatement, field measurements, free product removal, and soil and ground-water investigation activities, and removal or remediation of grossly contaminated soil. Conclusions and recommendations for further (if any) work should also be presented.

2. Introduction/Purpose

- _____ A. Brief statement of purpose

3. Background

- A. Site Description
 - _____ · A brief description of the site location and surrounding area
 - _____ · The location of any populations that could be affected by the release
- B. Vicinity map or sketch (See Figure 5C.1)
 - _____ · North arrow

Page

- _____ · Streets
- _____ · Surface water bodies
- _____ · Water supply or injection wells

_____ C. A U.S.G.S. 7.5 minute topographic quadrangle map indicating the location of the site

Note: All maps of the facility area should follow conventional mapping scenarios and should be easily read and interpreted. If this is not possible on one map, multiple maps are encouraged. If several maps are presented, all maps shall be in the same scale to aid in map comparisons. If geological maps are submitted, they should adhere to all normal geologic mapping conventions.

D. Site Plan(s) drawn to scale (See Figure 5C.2) showing details of the following:

- _____ · The type and extent of onsite, ground surface cover (i.e. asphalt, concrete, soil, fill material, grass, etc.)
- _____ · Locations of all products and waste fluid tanks (existing and removed), associated piping, sampling points (identify sample depths), and dispenser pumps
- _____ · Adjacent streets, buildings and property lines
- _____ · North arrow
- _____ · Area of excavation
- _____ · Locations of any stockpiled soil
- _____ · Locations of field measurements
- _____ · Utility conduits
- _____ · Surface water drainage courses
- _____ · Sewerage
- _____ · Water supply or injection wells

_____ · Catch basins, dry wells

E. Facility Information

_____ · A brief history and description of ownership and operation of existing and previously removed USTs (include any photos taken)

_____ · Results of initial surficial inspection of the area

_____ · Description of the use of product stored in tank(s)

F. UST Information (see Table 5C.1)

_____ · Number of UST (existing and closed)

_____ · Summary of the results of any tank-tightness testing performed on UST(s) closed

_____ · History of substances stored in existing and previously removed UST(s)

_____ · UST(s) capacity

_____ · Age of UST(s)

_____ · UST(s) construction material

_____ · Condition of UST(s) upon removal

_____ · Copy of written notice of intent to close UST(s) sent to DOH (if applicable)

4. UST Closure (The following information should be included in the Release Response Report if release is discovered during UST closure activities)

A. UST Cleaning

_____ · Describe activities to pump out and recycle or dispose of all product, sludge, and rinsate (include manifests and determination of hazardous waste characteristics as per 40 CFR Part 261)

_____ · Describe or cite procedures followed to clean UST and associated piping (cite references)

Page

_____ · Describe actions taken to monitor lower explosive limit (LEL)

B. UST Removal

_____ · Describe or cite procedures followed to remove tank or fill in place (indicate type of fill, cite references)

_____ · Date UST(s) removed and excavation(s) sampled

_____ · Indicate depth at which bottom of tank(s) is located and depth of excavation(s)

_____ · Describe any visual or olfactory evidence of a release(s)

_____ · Describe and include photos of UST(s) condition and soil/ground-water conditions

_____ · Indicate type and quantity of bedfill

C. UST Excavation

_____ · Describe soil lithology at site and as encountered (indicate total depths) in excavation and soil borings and include any photos taken

_____ · Provide a cross-sectional diagram of the longest sidewall of the UST section with PID measurements at depth intervals

_____ · Indicate presence/absence of stained soils or unusual odors

_____ · Indicate observed or estimated depth to ground water, and any seasonal variation

D. UST Disposal

_____ · Disposal facility (include manifest stating company name; where and when tanks and piping were disposed; see Figure 5C.5)

E. Stockpiled Soil

_____ · Indicate volume of soil stockpiled (contaminated and/or clean), related hydrocarbon vapor measurements, and related laboratory analytical data

- _____ · Describe proper soil management procedures undertaken, such as placing clean vs. contaminated soil on durable plastic sheeting and covering soil as appropriate to prevent runoff, fugitive dust, and vapors, and to protect public health and the environment

5. Site Sampling for Release Verification

A. Soil and Ground-Water Sampling

- _____ · Cross-sectional diagram showing specific location and depth of site sampling
- _____ · Describe site sampling procedures undertaken to collect and analyze all soil and water samples. Follow sampling guidance presented in Section 7 of this document
- _____ · Describe or cite sample control procedures followed, including types of sample collection containers used and method of appropriate sample preservation (See Section 7 of this document)

B. Chain-of-Custody

- _____ · Dates and times of sampling and receiving
- _____ · Sample ID correlating to field ID and lab ID
- _____ · Signatures of all personnel relinquishing and receiving sample
- _____ · Preparation and analytical methods requested

C. Field Measurement

- _____ · Description of field instrument(s) used
- _____ · Calibration standards and frequency of calibration
- _____ · Relative instrument response to various petroleum compounds based on calibration standard
- _____ · Field measurement procedures (e.g. jar or baggie headspace, insite, etc.)

- Table of Field Measurement Results: Results of field measurements presented in a comprehensive table with sample locations keyed to site plan (See Figure 5C.3)

D. Laboratory Analytical Results

- Follow recommended sample preparation and analytical methods presented in Section 7
- Table of Analytical Results: Present analytical results in a comprehensive table with the sample ID, sample location (keyed to site plan) including sample depths, preparation and analysis methods, constituent concentration and method detection limits. All tabulated results should be expressed in parts per million (mg/kg or mg/L). (See Figure 5C.4).
- Formal analytical results should be appended to the report. Results must be reported on laboratory letterhead and include the following:
 - Date sampled, received (by all parties), extracted, analyzed, and reported
 - Condition of samples upon receipt by laboratory (including notations of sample preservation--or lack of--broken sample custody seals, etc.)
 - Methods of preparation (extraction) and analysis
 - Detection Limits
 - Concentration of analyte, preferably expressed by (mg/kg, mg/l) ppm, (ug/kg, ug/l) ppb
 - Quality Assurance and Quality Control (QA/QC) protocol should include:
 - Field and reagent blank
 - Matrix spike and matrix spike duplicates
 - Calibration check standard
 - Surrogate recoveries

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- _____ - Acceptable ranges
- _____ - Signature of analytical testing personnel and the lab director/manager
- _____ · Samples must be extracted and analyzed in accordance with recommended maximum holding times

6. General History of the Release

- _____ A. Source and cause of the release
- _____ B. Type of product released
- _____ C. Estimated quantity of product released
- _____ D. When the release occurred
- _____ E. Duration of the release
- _____ F. Media contaminated by the release
- _____ G. Observed extent of the release at the time of the initial response
- _____ H. Dimensions of any excavations and the volume of any contaminated material removed

7. Initial Response and Abatement

- _____ A. Dates and details for the removal of the substance from the UST and tank closure, if applicable
- _____ B. Results of visual inspection of the facility and aboveground and/or exposed below ground releases
- _____ C. Contamination Migration (as liquid or vapor)
 - _____ · Provide details for the methods used to prevent further migration of the substance into soils and ground water
 - _____ · Provide details of any monitoring and mitigation of associated hazards

- _____ D. Discuss how any contaminated soils that were excavated or exposed were managed, treated, and/or disposed of

8. Results of Free Product Investigation and Removal

- _____ A. The name of the person(s) responsible for implementing the free product removal measures;
- _____ B. The estimated quantity, type, and thickness of free product observed or measured in wells, boreholes, and excavations;
- _____ C. The type of free product recovery system used;
- _____ D. Whether any discharge will take place on-site or off-site during the recovery operation and where this discharge will be located;
- _____ E. The type of treatment applied to, and the effluent quality expected from, any discharge;
- _____ F. The steps that have been or are being taken to remove free product including steps to obtain any necessary permits for any discharges;
- _____ G. The disposition of the recovered free product;
- _____ H. Schedule for completion of free product removal.

9. Results of Contaminated Soil Removal

- _____ A. Field measurement procedures and results
- _____ B. Volumes of soil removed

- _____ C. Locations of stockpiled soil corresponding to site plan
- _____ D. Procedures for managing stockpiled soil onsite
- _____ E. Procedures for managing stockpiled soil offsite
 - _____ · Copies of any notification of soil transport made to DOH
 - _____ · Procedures taken to properly transport soil and
 - _____ · Procedures for management at offsite location

10. Subsurface Conditions/Water Quality

A. Ground Water/Hydrogeology

The geology and hydrogeology of the site area should be characterized. At a minimum, the report should include the following:

- _____ · A concise description of both the regional and localized geology, including, but not limited to: soil and bedrock lithology, stratigraphy, and structural geology as determined through soil borings, excavations, rock cores, maps, and other sources
- _____ - At least two representative cross-sections should be included in the report (See Figure 5C.6). Both cross-sections should be submitted in the same scale. One cross-section should be oriented parallel to and intersecting the zone of contamination (interpolation is permitted). The second cross-section should be constructed normal (perpendicular) to the first (as control allows). Both cross-sections should be indexed on a plan map of the site, have at least one common control point, and should strictly adhere to all normal geologic mapping criteria. The cross-sections should illustrate, at a minimum: fresh, brackish, and saltwater elevations (if intersected); well screen lengths, total depth (TD) of penetrations; lithology and/or stratigraphy intercepted, including continuity or discontinuity of those lithologies; important structural features, if present; all surface topography; important natural or cultural locations (ponds, streams, rivers, swamps, highways, buildings, foundations, etc.); and the horizontal and vertical extent of contamination. (See Figures 5C.7, 5C.8, and 5C.9).

_____ - A copy of the boring logs (See Figure 5C.10) and all other pertinent information, such as photos or diagrams of excavations should be included.

· Based on literature; maps; and field, test, and core data, a representative and accurate classification of the regional and localized hydrogeology should be submitted, including at a minimum:

_____ - A table listing the DLNR well registration number, well use, depth to ground water, and construction details (total depth, casing type and size, and screened interval) for all wells within 1/4 mile of the site

_____ - The known or recorded depth to ground water beneath the site, using the State of Hawaii DLNR Ground Water Index, monitoring and recovery well data, and other relevant sources

_____ - A representative description of water/fluid pressure as indicated in water-level (head) contour and/or potentiometric maps. The flow system should depict the horizontal component of flow and any temporal changes in hydraulic gradient due to either manmade or naturally occurring influences (e.g. fill, utility conduits, pumping wells, tidal, etc). See Figure 5C.11.

_____ - The direction, estimated volume, and estimated velocity of ground water flow

_____ - The characteristics of the uppermost aquifer, including the nature of the aquifer (i.e. caprock, basal, perched, or dike-confined), hydraulic conductivity, permeability and porosity, any hydraulic interconnections, aquifer use, and salinity or conductivity. If aquifer tests are performed, discussion should include the well location and completion details, test methods used, and calculations used.

_____ - Characterization of the surface water bodies within 1/4 mile of the facility. Both the ephemeral, perennial, and permanent surface water bodies should be addressed. The characterization should include the ocean influence, lakes, estuaries, streams, ditches, drains, swamps and channels. The location, flow, velocity, depth, width, inflow, and outflow (gaining or losing relationship) should be approximated or referenced. As a subset, a description of the sediments therein, depositional area, and

origin of deposition, which could influence contamination fate and transport, should be included.

- _____ - Potential areas of ground-water recharge and discharge including both manmade and natural features such as fill, ditches, streams, channels, swamps, springs, lagoons, bays, or ocean, etc
- _____ - A discussion of the available published climatological data for the site area, including the monthly average precipitation and seasonal variations of precipitation which could influence contaminant fate and migration

B. Contamination

The type, magnitude, and extent of soil and water contaminants at the facility should be completely characterized. This characterization should include, at a minimum, the following:

- _____ · Complete characterization, in both the horizontal and vertical extent, of the contaminants by media and phase in the vicinity of the release. The characterization should include, at a minimum:
 - _____ - A summary table of the results of all laboratory analyses of soil and water samples with sample locations keyed a plan map(s)
 - _____ - A summary table of the results of all field measurements and screening of soil and water samples with sample locations keyed a plan map(s)
 - _____ - A plan map(s) illustrating the areal extent of contamination by media and phase
 - _____ - At least two representative cross-sections depicting the vertical extent of contamination by media and phase (See Figure 5C.12).
 - _____ - Copies of all laboratory data forms and associated QA/QC documentation as an appendix to the report
- _____ · A comparison of the contaminant concentrations relative to the appropriate tiered action level

- _____ · Any information as a result of a literature or records search indicating background quality of surface and ground water in the vicinity of the release with specific reference to the contaminants of concern
- _____ · Information on the physical and chemical characteristics of the contaminants of concern relative to their persistence and mobility in the environment

Note: All references used to obtain the above information should be specifically cited.

11. Potential Migration Pathways

- _____ A. Discussion of any significant surface and/or subsurface features (manmade or naturally occurring) that could impede, re-direct, expedite, or that could affect or be affected by the migration of petroleum hydrocarbons (i.e. stratigraphic discontinuities; water supply wells; structures such as sheet piles, basement foundations, dry wells, septic systems, utility structures, storm drains, sewer lines, roads and bridges; irrigation canals, drainage channels, marshes, streams, rivers, and lakes, etc.). These features are to be referenced on the vicinity map or site plan(s) wherever possible.

12. Surrounding Populations and Land Use

- _____ A. Description of local land use
- _____ B. Identification and location of any populations or structures potentially affected by the release, such as: schools, day care centers, hospitals, residential areas and recreational areas, etc

13. Results of Cleanup Actions

- A. General
 - _____ · Provide an itemization and description of all remedial activities completed subsequent to the last monitoring report. Identify any milestones achieved or any problems encountered. Offer conclusions and recommendations as appropriate. Identify anticipated dates for future activities.

B. System Operations

- _____ · Provide summary tables of pertinent operational data, such as total time operating, total down time, average flow rates and pressures, average pump drawdowns, average operating temperatures, quantities of nutrients or conditioners added, frequency of irrigation and cultivation, etc. as may be appropriate to the remedial technology
- _____ · Provide summary tables of field measurements and/or analytical results of influent and effluent sampling for all treatment systems
- _____ · Provide summary tables and/or time series plots of total quantity of contaminated media removed (soil, soil vapor, ground water, free product), total quantity of contaminants removed, and total quantity of contaminants disposed of or recycled. Include any manifests or bills of lading.

C. Well Gauging

- _____ · Provide summary tables of measured monthly water table elevations and free product thicknesses or subsurface air pressures for each ground-water or soil vapor monitoring and recovery well. All water-level measurements should be taken from surveyed measuring points. Identify the equipment used to collect the data.
- _____ · Provide a potentiometric contour map and a free product thickness map for each monthly data set. Indicate the direction ground-water flow. Indicate the zone of capture for any soil vapor extraction, ground-water recovery, and/or free product removal systems.
- _____ · Provide an estimate of the amount of free product remaining in the subsurface. Include the method of estimation.

D. Contaminant Conditions

- _____ · Provide summary tables of the field measurements and/or analytical results for all quarterly soil and water sampling. All samples should be analyzed for all appropriate indicator parameters using EPA-approved methods. Water samples do not need to be collected from

monitoring wells containing free product. Identify the methods and equipment used to purge and sample each well.

14. Summary of Findings

A. Contamination

- _____ · Summarize all findings as a result of the initial response, initial abatement, field measurements, free product removal (if applicable), and removal or remediation of grossly contaminated soil activities. Present interpretations that develop a conceptual model of the site and the contaminant conditions. Identify limitations of the conceptual model and any information gaps.

15. Conclusions/Recommendations

- _____ A. Present conclusions based on the findings of this work phase. Identify the need, if any, for further release response action. Make recommendations for any additional investigation further work or cleanup actions, if necessary.
- _____ B. If No Further Action is proposed for the site, complete and include with the submitted Initial Release Response Report the *Hawaii DOH UST Checklist for Final Release Response Report* found in Appendix 5-K.

16. Qualifications of Personnel

- _____ A. Provide a list of all persons by name, title, and company affiliation who performed the tasks as described in this report
- _____ B. Provide a description of the duties and responsibilities of each person
- _____ C. Provide the qualifications of each person listed including education, experience, and training
- _____ D. Provide a project organizational diagram of all persons, including consultants and contractors
- _____ E. Provide the name and telephone number for one person designated as the Project Coordinator responsible for the day-to-day response activities for carrying out this work plan

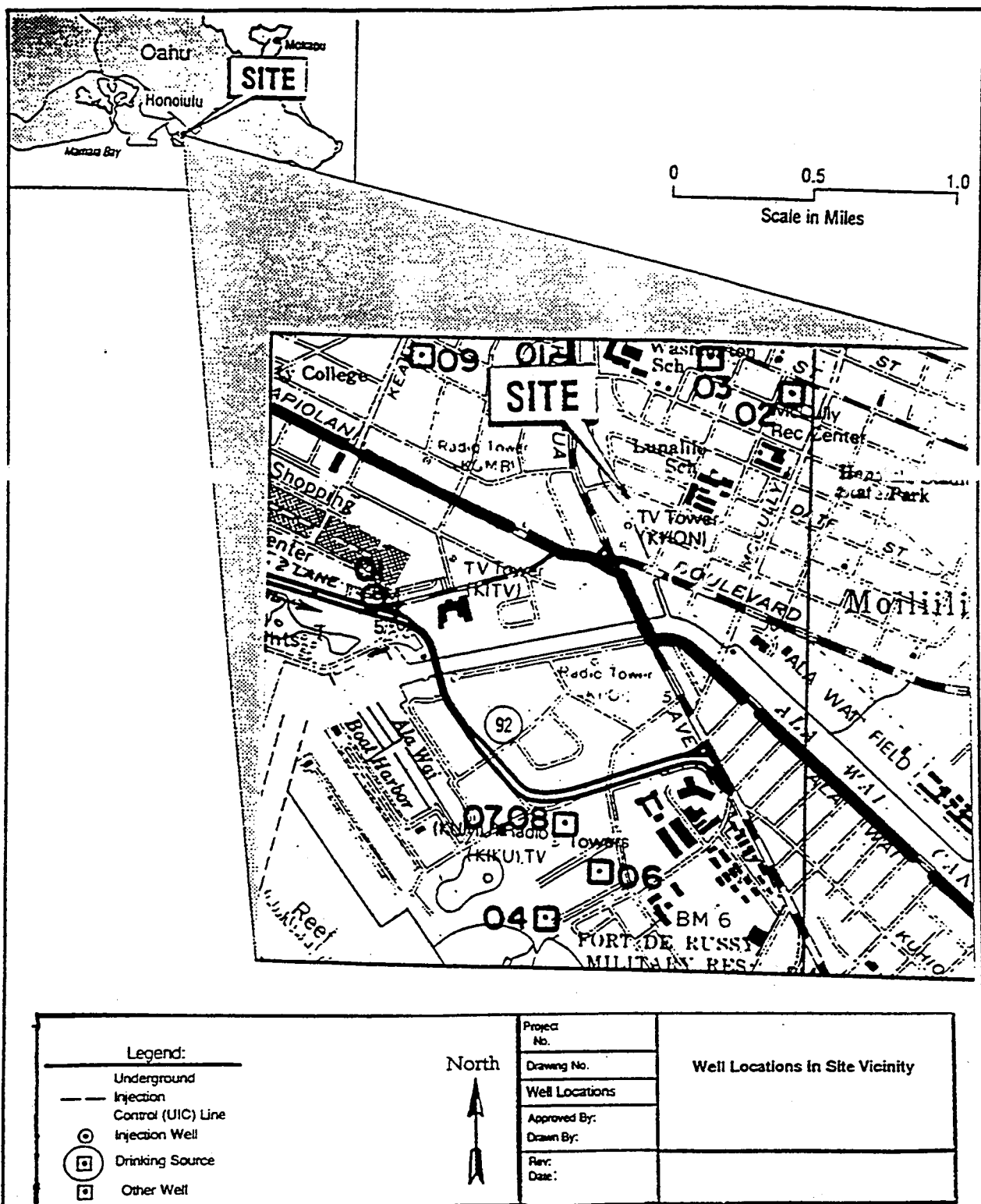


Figure 5C.1 Vicinity Map

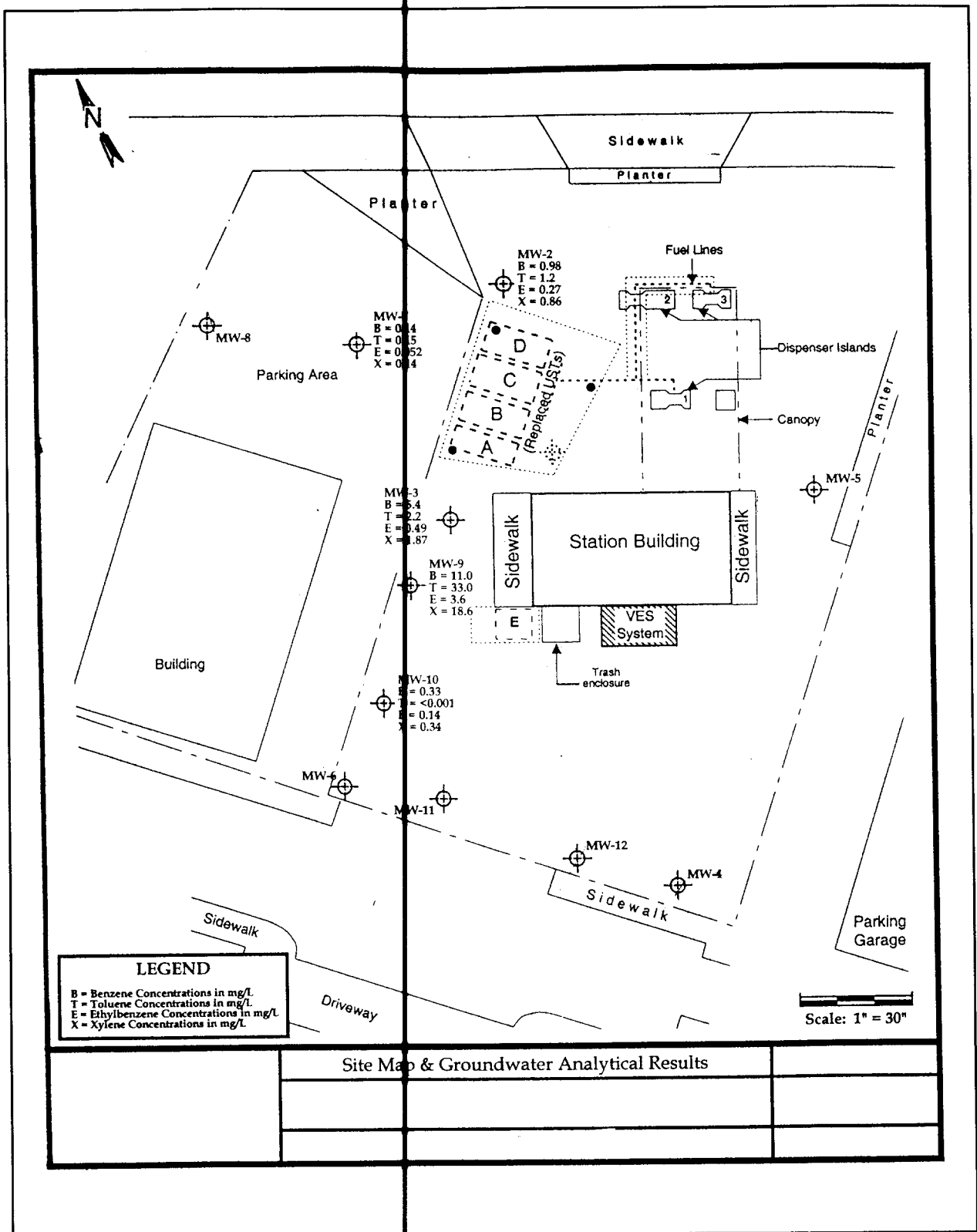


Figure 5C.2 Site Plan

TABLE 1
SUMMARY OF FIELD TOTAL VOLATILE ORGANIC VAPOR MEASUREMENTS

Boring Number	Depth (feet)	OVA Reading (ppm)
-1	0	Not Detected
-1	3	Not Detected
-1	5	0.3
-2	0	Not Detected
-2	3	Not Detected
-2	5	Not Detected
-3	0	Not Detected
-3	3	Not Detected
-3	5	Not Detected
-4	0	Not Detected
-4	3	Not Detected
-4	5	Not Detected
-4	6.5	125
-5	1.5	6.0
-5	3	0.9
-5	5.5	0.5
-5	7	2.0
-5	9.5	4.4
-6	3	0.6
-6	4	10.1
-6	5	0.5
-6	7	9.8
-6	10	9.8
-7	3	11.5
-7	3.5	2.3
-7	6	2.9
-7	7	2.0
-7	8	21.6
-7	9	4.4

TABLE 3
RESULTS OF HYDROCARBON VAPOR ANALYSES

Sample No.	Depth (ft.)	PID Reading (ppm)
8493-011	5.0	0
8493-012	10.0	0
8493-021	5.0	130
8493-022	10.0	0
8493-031	5.0	18
8493-032	10.0	0
8493-033	15.0	0
8493-041	5.0	90
8493-042	10.0	17
8493-051	5.0	0
8493-052	10.0	0
8493-061	5.0	0
8493-062	10.0	0
8493-071	5.0	0
8493-072	10.0	0
8493-081	5.0	0
8493-082	10.0	0

Figure 5C.3 Table of Field Measurement Results

Groundwater Sample Laboratory Analytical Results

		EPA Method Number						
Well No.	Date Collected	8015 M	8020				8260	
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MtBE	MtBE
		(Concentrations in mg/L)						
MW-9	10/17/1996	340	42	65	5.6	33		
MW-9	02/18/1997	300	26	55	4.6	30		
MW-9	06/03/1997	270	28	48	4.1	25		
MW-9	09/10/1997	480	26	50	4	24		
MW-9	12/29/1997	207	18	42	2.8	19		
MW-9	03/17/1998	190	19	45	3.8	22		
MW-9	06/25/1998	16	2	0.18	0.012	3.3		
MW-9	09/15/1998	180	120	130	28	200		
MW-9	12/16/1998	161	13	50	4.5	28	0.86	
MW-9	04/05/1999	190	20.0	62.0	5.3	32.0		
MW-9	06/29/1999	120	12.0	30.0	3.6	20.6		
MW-9	09/28/1999	96	11.0	32.0	3.3	17.3	2.1	1.6
MW-9	12/23/1999	110.0	11.0	33.0	3.6	18.6	1.6	0.12
MW-10	10/17/1996	2.5	0.42	0.052	0.11	0.49		
MW-10	02/18/1997	18	1.8	0.1	0.43	1.5		
MW-10	06/03/1997	15	2.5	0.17	0.52	2.3		
MW-10	09/10/1997	41	1.4	0.077	1.5	1.3		
MW-10	03/17/1998	3.2	0.53	0.02	0.16	0.55		
MW-10	06/25/1998	<2.0	0.07	0.0035	<0.002	0.0097		
MW-10	09/15/1998	1.4	1.8	0.056	0.52	1.7		
MW-10	12/16/1998	9.2	1.7	0.044	0.5	1.7	4.6	
MW-10	04/05/1999	1.7	0.78	0.013	0.089	0.19		
MW-10	06/29/1999	1.4	0.41	0.012	0.082	0.235		
MW-10	09/28/1999	3.3	0.69	0.027	0.27	0.75	2.0	1.7
MW-10	12/27/1999	1.7	0.33	<0.001	0.14	0.34	1.5	2.0
DOH Tier 1 Action Level		No Standard	1.7	2.1	0.14	10	202	202

Notes:

- 1) Concentrations in BOLD equal or exceed DOH Tier 1 Action Levels
- 2) <# = Not Detected at or above listed laboratory limit of quantitation
- 3) * Indicates MtBE concentration confirmed by EPA Method 8260A.
- 4) Listed DOH Tier 1 Action Levels are for groundwater in an area where drinking water source is not threatened and rainfall is less than 200 cm/year.
- 5) TPH-G analyzed by EPA Method 8015 Modified. BTEX and MTBE analyzed by EPA Method 8020.

Figure 5C.4 Table of Analytical Results

UST SYSTEM DISPOSAL CERTIFICATION

PART A: (To be Completed by Project Coordinator)	
1. UST System Removed From: <div style="display: flex; justify-content: space-between;"> Facility Name: _____ UST Facility ID No.: _____ </div> <div style="display: flex; justify-content: space-between;"> Address: _____ </div>	
2. Information on the Closed UST System: <div style="display: flex; justify-content: space-between;"> Size in gallons: _____ Date of Removal: _____ </div> <div style="display: flex; justify-content: space-between;"> Construction of Tank: _____ </div> <div style="display: flex; justify-content: space-between;"> Construction of Piping: _____ </div> <div style="display: flex; justify-content: space-between;"> Date of Disposal: _____ </div>	
3. UST System Disposed/Recycled at: <div style="display: flex; justify-content: space-between;"> Facility Name: _____ </div> <div style="display: flex; justify-content: space-between;"> Address: _____ </div> <div style="display: flex; justify-content: space-between;"> Contact: _____ Phone No.: () _____ </div> <p style="margin-top: 10px;">I hereby certify that the described UST system (tank and associated piping) from the aforementioned facility has been properly removed, cleaned, and transported in compliance with applicable Federal and State laws, rules, and regulations and delivered to the aforementioned disposal/recycling facility.</p> <div style="display: flex; justify-content: space-between;"> Name: _____ Title: _____ </div> <div style="display: flex; justify-content: space-between;"> Company Name: _____ </div> <div style="display: flex; justify-content: space-between;"> Signature: _____ Date: _____ </div>	
PART B: (To be Completed by Disposal/Recycling Facility Owner/Manager)	
<div style="display: flex; justify-content: space-between;"> Disposal/Recycling Facility Name: _____ </div> <div style="display: flex; justify-content: space-between;"> Address: _____ </div> <div style="display: flex; justify-content: space-between;"> Contact: _____ Phone No.: () _____ </div> <p style="margin-top: 10px;">I hereby certify that the above described UST system (tank and associated piping) has been properly demolished and/or disposed of in compliance with applicable Federal and State laws, rules, and regulations.</p> <div style="display: flex; justify-content: space-between;"> Name: _____ Title: _____ </div> <div style="display: flex; justify-content: space-between;"> Signature: _____ Date: _____ </div>	

Figure 5C.5 Example UST System Disposal Certification

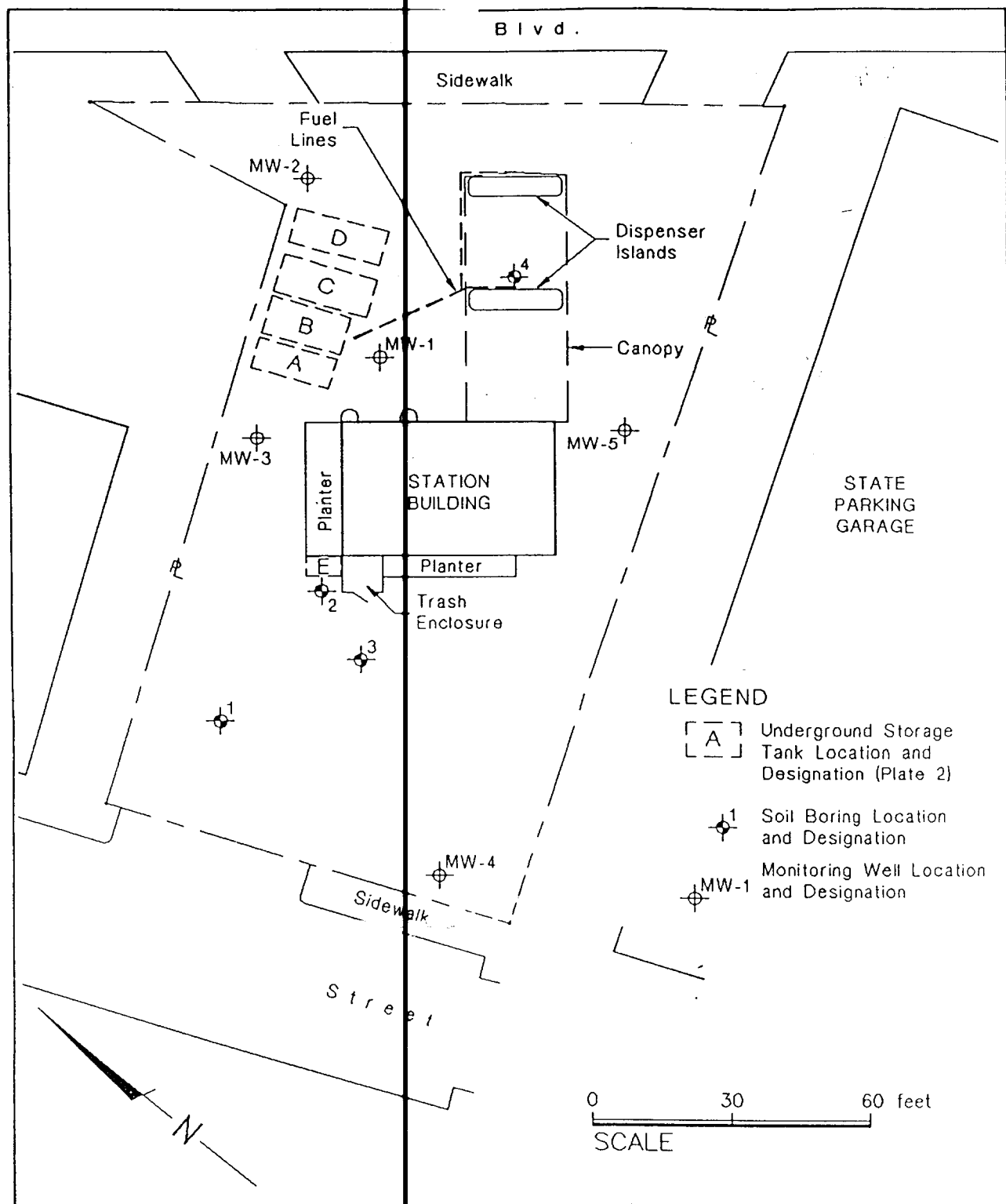


Figure 5C.6 Example of Site Plan Identifying Locations of Soil Borings or Ground Water Monitoring Wells

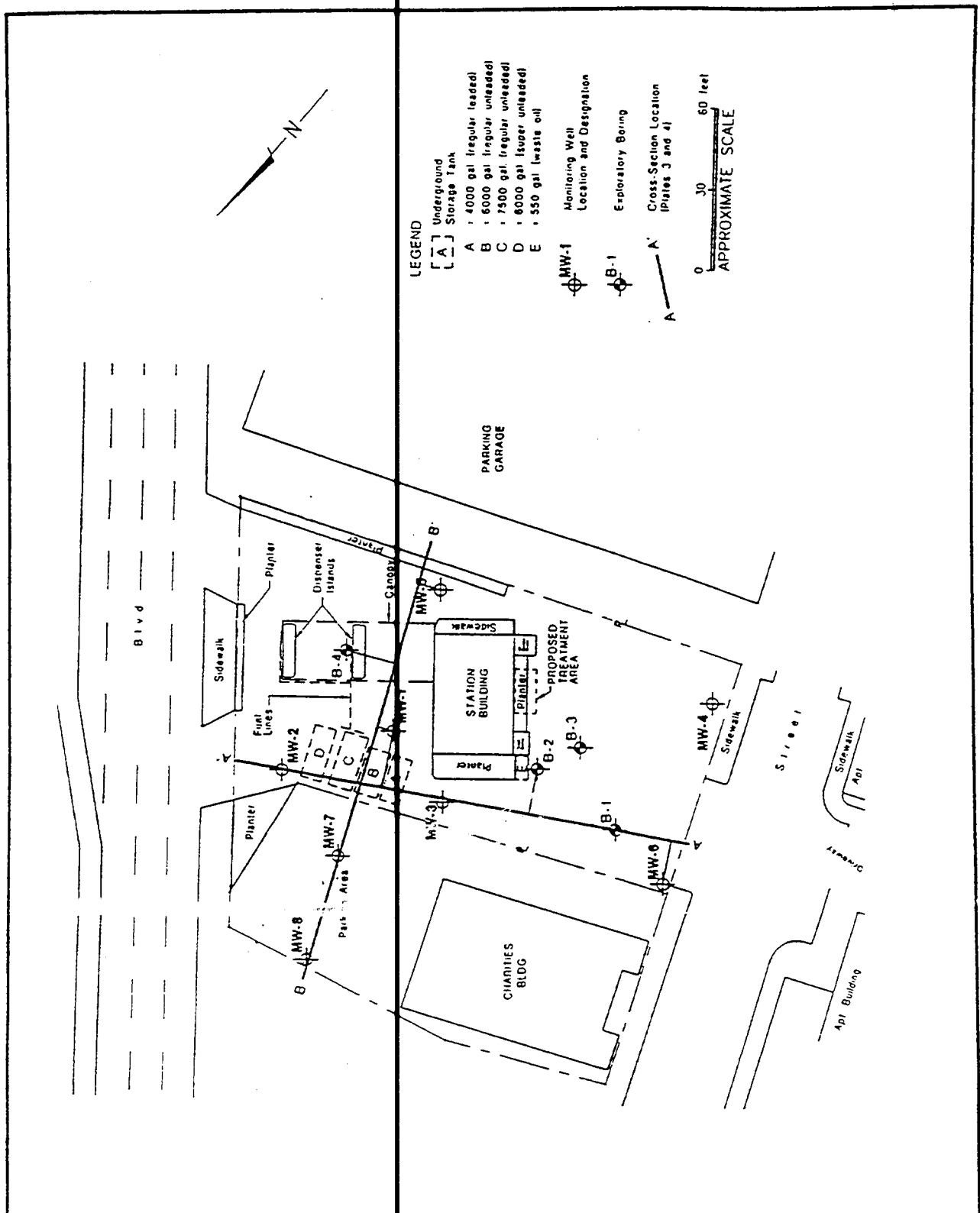


Figure 5C.7 Example of Representative Cross Section

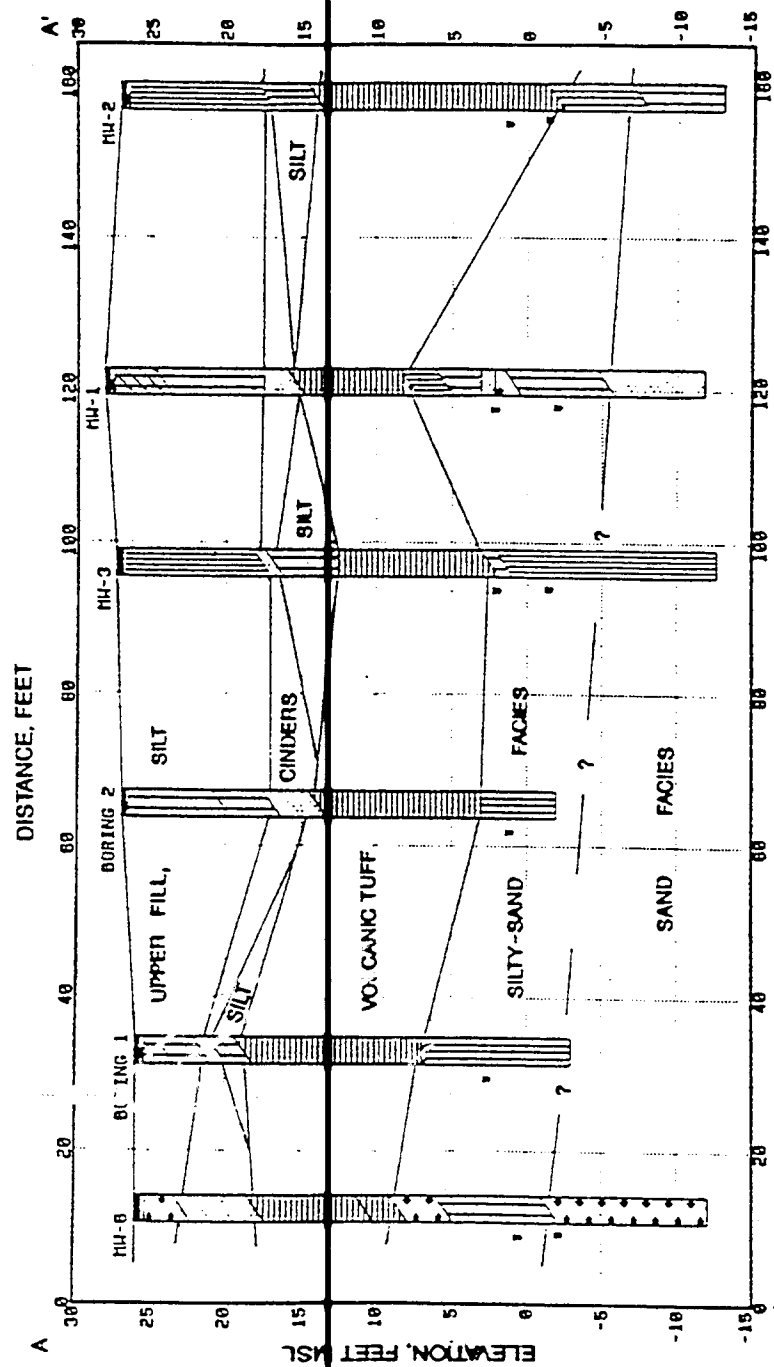


Figure 5C.8 Example of Representative Cross Section

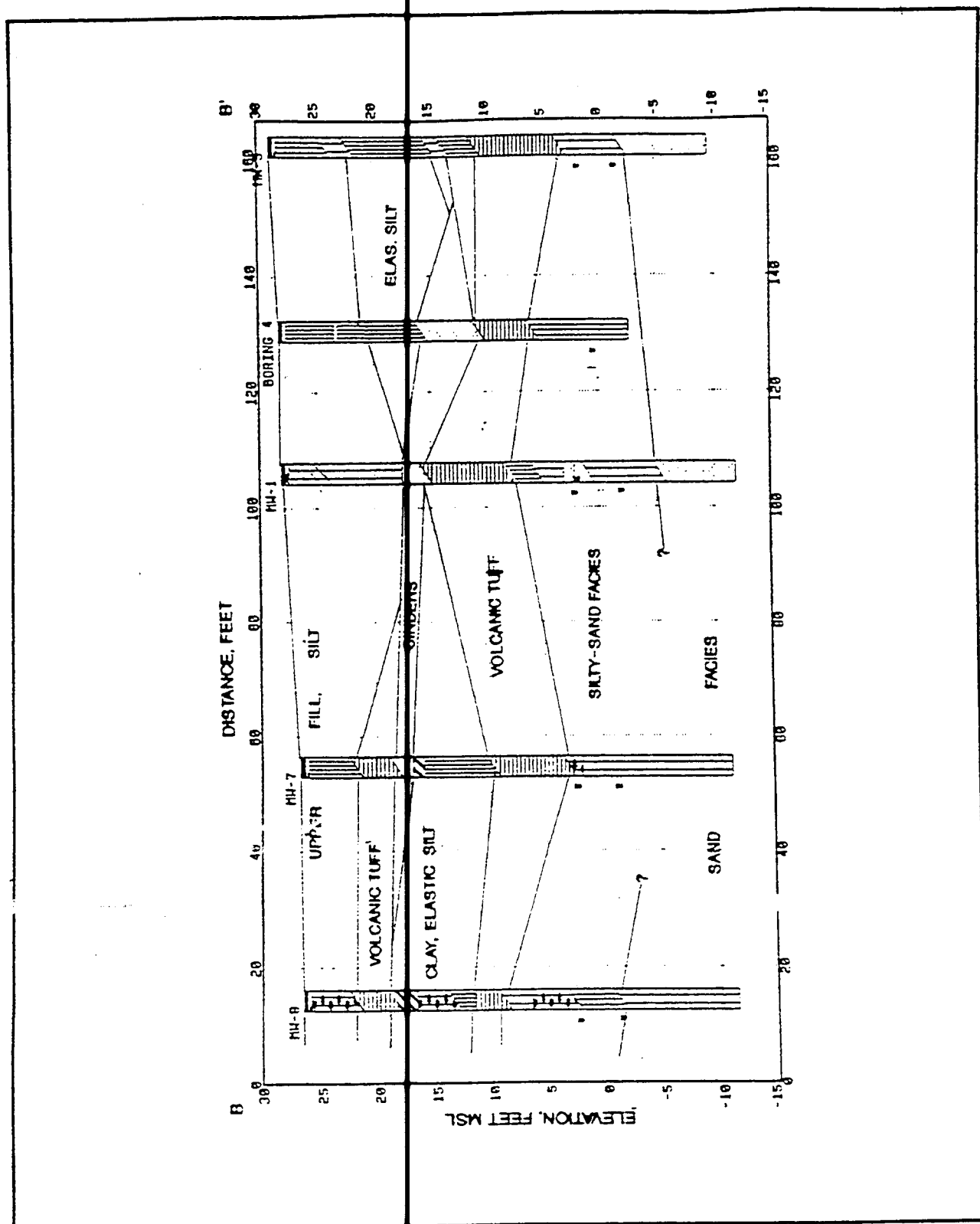


Figure 5C.9 Example of Representative Cross Section

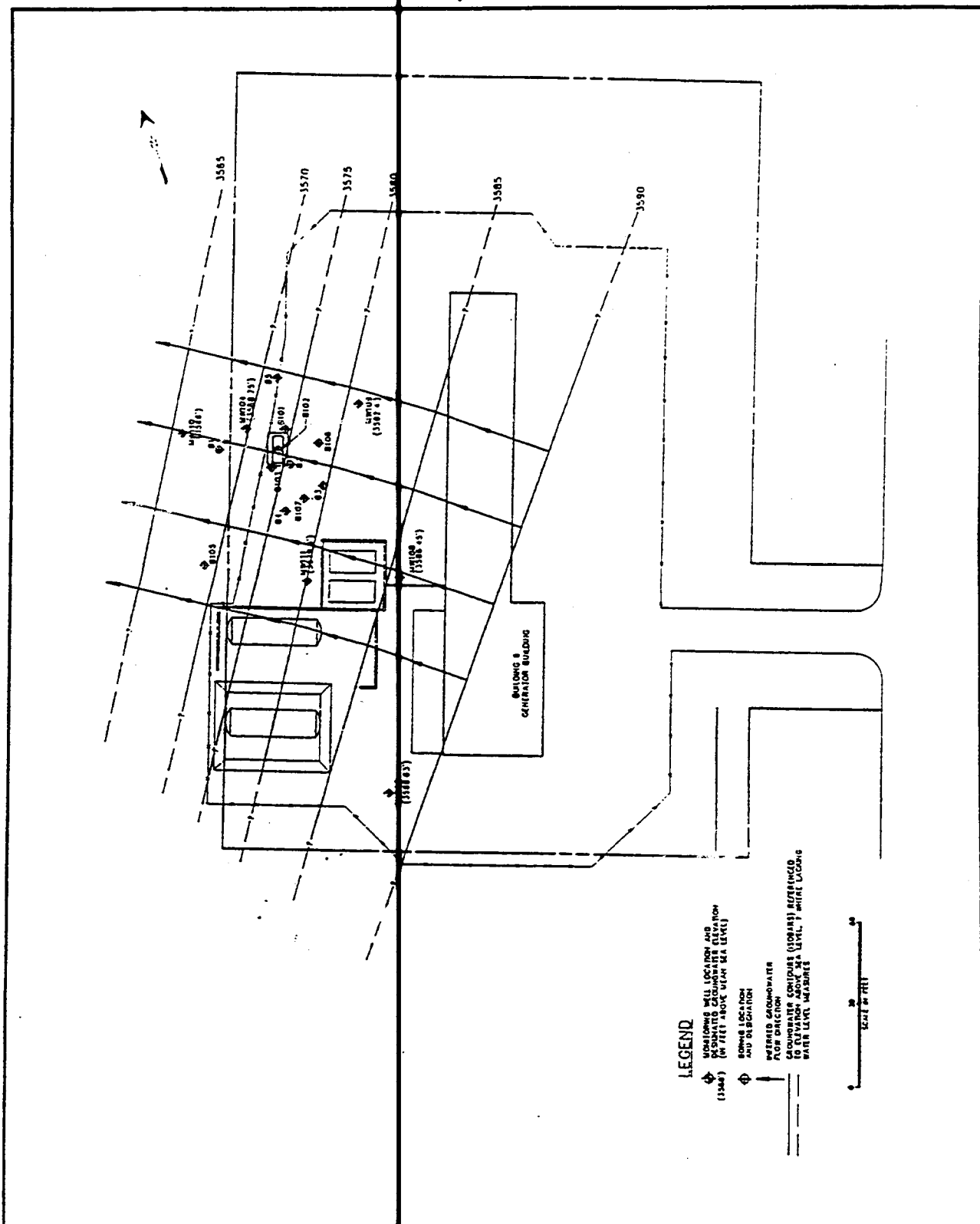


Figure 5C.11 Example of Water-Level Contour Map

Table 5C.1 UST Summary

UST	Date Installed	Capacity	Construction	Substances Stored	Past History (specify dates)		Date Closed	Date Removed
					Leaks	Repairs		
#1								
#2								
#3								
#4								
#5								
#6								